

Confirmation No. 3541

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	SCHETTERS	Examiner:	Behm, H.
Serial No.:	10/575,771	Group Art Unit:	2838
Filed:	April 12, 2006	Docket No.:	NL031227US (NXPS.537PA)
Title:	POWER CONVERTER WITH A SINGLE DIODE RECTIFIER AND A FILTER		

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**REPLY BRIEF**

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Customer No. <b>65913</b>
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Dear Sir:

This is a Reply Brief submitted pursuant to 37 C.F.R. § 41.41(a)(1) for the above-referenced patent application. This Reply Brief is submitted in response to the Examiner's Answer dated July 22, 2010.

Authorization is given to charge/credit **Deposit Account 50-4019** (NL031227US) all required fees/overages to enter this paper.

**I. Status of Claims**

Claims 1-2 and 7-11 stand rejected and are presented for appeal. Claims 3-5 are objected to as being dependent upon a rejected base claim but are noted as being allowable if rewritten. Claims 6 and 12-15 are allowed.

**II. Grounds of Rejection**

The grounds of rejection to be reviewed on appeal are as follows:

- A. Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) over Balakrishnan (U.S. Patent No. 6,813,168) in view of Saleh (U.S. Patent No 4,353,114).
- B. Claim 7 stands rejected under 35 U.S.C. § 103(a) over the '168 and '114 references and further in view of Balakrishnan (U.S. Patent 6,525,514).
- C. Claims 8-11 stand rejected under 35 U.S.C. § 103(a) over the '168 and '114 references and further in view of the TEA152x family data sheet by Phillips.

**III. Appellant's Reply Argument**

The Examiner has impermissibly introduced new grounds of rejection to address Appellant's previous arguments. The Examiner fails to identify the new grounds as such. Moreover, much of the Examiner's Answer rests upon a newly-presented conclusion/finding of fact that is both unsupported and fatal to the rejections.

Regarding the new grounds of rejection, the Examiner's Answer articulates, for the first time, hypothetical combinations of elements. Each of these hypothetical combinations requires different factual findings and presents different issues on appeal. Such aspects represent new grounds of rejection<sup>1</sup> and should have been clearly articulated prior to the close of prosecution. Pursuant to MPEP § 1207.03, entrance of new grounds in an Examiner's Answer should only occur in rare circumstances. This section of the MPEP requires that any "new ground of rejection made by an examiner in an answer must be: (A) approved by a Technology Center (TC) Director or designee; and (B) prominently identified

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<sup>1</sup> New grounds of rejection should be acknowledged when changes are made to the *precise reason* for the rejection and not upon the statutory basis alone. *See, e.g., Hyatt v. Dudas*, 551 F.3d 1307, 1312 (Fed. Cir. 2008) ("a 'ground of rejection' for purposes of Rule 1.192(c)(7) is not merely the statutory requirement for patentability that a claim fails to meet but also the precise reason why the claim fails that requirement.") Accordingly, it is not proper to materially-change the precise reason for the rejection without acknowledging that such a change represents new grounds of rejection.

in the "Grounds of Rejection to be Reviewed on Appeal" section and the "Grounds of Rejection" section of the answer." This same section further states that new grounds of rejection are never appropriate "if an appellant has clearly set forth an argument in a previous reply during prosecution of the application and the examiner has failed to address that argument, the examiner would not be permitted to add a new ground of rejection in the examiner's answer to respond to that argument but would be permitted to reopen prosecution, if appropriate." Appellant requests that the application be remanded to the Examiner for reconsideration and compliance with the requirements of the MPEP.

The Examiner has introduced new findings of fact to support new grounds of rejection for obviousness. Several of these new assertions manifest themselves in the form of circuit diagrams (depicted in Figures B and C of the Examiner's Answer), which are presented in direct response to Appellant's previous arguments regarding the lack of a clearly articulated combination. These new circuit diagrams and the associated arguments frustrate the goal of prosecution and unduly burden the appeal process with new grounds of rejection that were not at issue at the close of prosecution on the merits. Appellant express some frustration at not having been presented with such explanations until after incurring the time and expense that comes with the Appeal process. Perhaps for this very reason, MPEP § 1207.03 expressly prohibits the Examiner from using the Examiner's Answer as a mechanism for addressing Appellant's previous arguments through these new grounds of rejection. Accordingly, these new circuit diagrams are impermissible because they attempt to address Appellant's arguments made during prosecution, *e.g.*, regarding the lack of a clearly articulated rejection and inability to understand what the proposed combination is or is not.

The proposed combinations depicted in Figures B and C of the Examiner's Answer underscore the importance of clearly articulating the basis for a rejection. The Examiner has modified the figure from the primary reference to allege correspondence to limitations without acknowledging that the modifications represent new grounds of rejection. Never before has the Examiner presented these figures, and issues or arguments specific to these new grounds of rejection should have been addressed during prosecution on the merits. For example, the Examiner has added a "COMMON" node to the figure, no explanation has been provided for adding such a node. Appellant notes that how and where a circuit common is

connected can be a critical consideration in a filter circuit. Moreover, the Examiner's basis for alleging that such circuits are rendered obvious by the cited references is not proper, as explained in more detail hereafter.

Appellant is further frustrated by the Examiner's attempt to buttress arguments and the new grounds of rejection by introducing a new finding of fact. This new finding of fact is an improper finding that the secondary '114 (Saleh) reference teaches an "enhanced" filter circuit. The Examiner presents no supporting evidence to explain why the skilled artisan would find that the identified filter is taught to be "enhanced," in any regard. The Examiner does not consider or explain with any findings of fact with respect to what properties the identified filter would be considered "enhanced." Perhaps more importantly, the Examiner does not explain or provide any supporting evidence showing or suggesting that the filter circuit of the '114 reference is "enhanced" relative to the filter circuit of the primary '168 reference. It is not clear what the Examiner believes that this enhancement relates to or what properties are enhanced. Clearly, the circuit of the '114 reference is not an enhancement over all pi filter circuits ever created, nor is it particularly well-suited for all applications. If this were indeed the case, no other pi filter would ever be used. The Examiner's alleged finding of fact with regards to this "enhancement" is unsupported and tardy.

Absent this unsupported and new finding of fact, the Examiner presents no other reason to implement the Examiner's proposed modification. Notwithstanding, Appellant addresses various statements of the Examiner, and thereby shows further support the patentability of the instant claims.

The Examiner has presented new factual conclusions, new assertions of correspondence and at least one new reasoning for the legal conclusion of obviousness. For at least these reasons, Appellant requests that the application be remanded to the Examiner for reconsideration and compliance with the requirements of the MPEP, *e.g.*, as set forth in at least MPEP § 1207.03.

Notwithstanding, Appellant believes that the new grounds are improper for the reasons presented below.

The Examiner's Answer states (p. 7):

“Balakrishnan teaches the desirability of a pi filter in Figure 1 and the additional embodiments are also pi filters where the values of the input capacitance and inductance are varied.”

Appellant responds:

The teachings that tout the desirability of the filter circuit(s) from the primary ‘168 (Balakrishnan) reference are evidence of nonobviousness because they represent teaching away from other filter solutions. Accordingly, this aspect is further evidence of the improper nature of the rejection.

The Examiner's answer states (p. 7):

“Saleh discloses an enhanced pi filter which one of ordinary skill in the art would have recognized as beneficial for providing improved filtering.”

Appellant responds:

The circuit of the ‘114 (Saleh) reference does not appear to be consistent with a traditional pi filter. Appellant's previous arguments in this regard were not addressed by the Examiner and therefore stand uncontroverted. For instance, Appellant indicated that the circuit of the ‘114 reference appears to use a saturable reactor, which has no apparent applicability to the teachings of the primary ‘168 reference. The Examiner chose not to address this aspect and instead focused upon aspects such as the alleged “enhanced” nature thereof.

While the secondary ‘114 reference depicts a filter circuit, it is tellingly silent as to the properties of the filter circuit. It therefore remains unclear what reason the skilled artisan would look to the significantly different circuit of the ‘114 reference when the primary ‘168 reference teaches the importance and advantages of another circuit. As discussed hereafter, the Examiner's conclusions otherwise are unsupported

conclusions relating to alleged enhancements that are neither taught by the references nor explained by the Examiner.

The Examiner's Answer states (p. 8):

"Saleh discloses the input (supply) voltage can be unregulated (Saleh column 1, lines 30-33). Clearly Saleh envisions an AC component present on the input which needs to be filter."

Appellant responds:

By referencing an ambiguous and hypothetical "AC component" the Examiner is perhaps attempting to twist Appellant's argument to include, for example, a ripple current on otherwise DC supply. Semantics aside, Appellant's previous argument was directed toward the differences between an AC supply and a DC supply.

Appellant respectfully submits that a DC supply is significantly different from an AC supply, regardless of the presence or absence of an "AC component." As a general matter, an AC supply reverses the flow of current, while a DC supply does not. This is the context in which Appellant, and the cited references, use the terms.

Accordingly, the presence or absence of a ripple current does not address the differences therebetween.

The Examiner's Answer states (p. 8):

"Secondly, Appellant's assertion that the Balakrishnan reference is directed toward an AC source is also wrong since the output of the rectifier has by definition a direct current (DC)."

Appellant Responds:

The Examiner overlooks the differences between an AC to DC conversion circuit and a DC to DC conversion circuit. AC to DC conversion circuits present different concerns with noise, including, for example, the frequency and level of the noise. For instance, without significant bulk capacitance, a single rectifier AC to DC conversion

circuit will exhibit large voltage spikes because there will be periods of time during which there is zero voltage provided from the rectifier. DC to DC conversion circuits do not have this problem. The particular filter circuit of the secondary '114 reference would, for instance, be concerned with reflections of noise back to the primary DC power supply and with the IV characteristics of the Zener diode, *e.g.*, when there is an overvoltage condition. Moreover, each circuit would be designed for use with the current draw of their respective load circuit. The Examiner presents no findings of fact that would reconcile these differences.

The Examiner's Answer States (p. 8):

"Fundamentally a pi filter acts to filter frequency components regardless of the degree to which the input is AC or DC. The functionality of the filter is not changed by the input to the filter, since the filter still acts to filter frequency components."

Appellant Responds:

Appellant first notes that the functionality of a filter, *i.e.*, its output and ability to filter noise, is closely tied to the input it receives. Thus, an allegation that the input to a filter circuit is irrelevant to the function of the filter circuit overlooks the reality that filter circuits are specifically designed for a particular input and a desired output. Appellant's Appeal Brief discussed such differences in function as related to the particular application for which the circuits of each of the references were designed. In this manner the proposed combination does not simply perform the function that each of the elements performed separately. The Examiner has glossed over the technical details and reaches a conclusion that wrongly suggests that the expected input to the filter circuit is an unimportant consideration to the skilled artisan.

The Examiner's Answer States (p. 8):

"Saleh disclosed an enhanced filter with improved filter capability. ... Therefore the improved filter of Saleh would be more appropriate under conditions where more AC ripple was present and would provide more beneficial filter of the AC components."

Appellant Responds:

This lately-argued “enhancement” argument has no basis in the record. It is unclear from the Examiner or the secondary ‘114 reference why a skilled artisan would believe that there would be any “enhanced” property of the identified filter. Unsupported findings of fact presented in an Examiner’s Answer cannot form the basis of a rejection.

The Examiner’s Answer States (p. 9):

“The zener diode of Saleh is used as a voltage clamp and provides additional over-voltage protection. The pi filter of Saleh does not rely on or require the zener diode.”

Appellant Responds:

Appellant agrees that the ‘114 reference uses a Zener diode as a voltage clamp that converts an input DC signal to a level determined by the Zener diode (*see* Appeal Brief, p. 5). Appellant reiterates that the filter of the ‘114 reference was designed for use with such components and, for example, for preventing a voltage ripple from being reflected back to the DC source supply. (‘114 reference; Col. 3:38-46). Accordingly, there exist significant differences between the teachings of the two references.

The Examiner’s Answer States (p. 9):

“Finally, nothing in the claim language prohibits implementing additional over-voltage protection and the rejections are appropriate whether additional over-voltage protection were implemented or not implemented.”

Appellant Responds:

Appellant’s relevant argument was not directed toward the claim language *per se* and was instead directed toward the improper nature of the alleged combination. Accordingly, this passage is unresponsive.









The Examiner's Answer States (p. 9):

"In fact the filter illustrated in Figure 1A of Saleh shows an inductance L1 consisting of two mutually coupled inductors with a laminated core. L1 does not depict a saturable reactor."

Appellant Responds:

Upon further research, Appellant agrees that the depicted symbol seems to have multiple uses (*see, e.g.,* [http://library.thinkquest.org/10784/circuit\\_symbols.html?tql-iframe](http://library.thinkquest.org/10784/circuit_symbols.html?tql-iframe), the relevant figure is provided for the convenience of the board and is not relied upon to show the improper nature of the rejection). Regardless of whether the symbol is a saturable reactor or two mutually coupled inductors, the resulting circuit has relevant differences from the circuit of the primary '168 reference. For instance, the coupling between the two inductors is not presented in, contemplated by, nor shown to serve any purpose in the primary reference. None of these aspects are considered or addressed by either the references or the Examiner.

[http://library.thinkquest.org/10784/circuit\\_symbols.html?tql-iframe](http://library.thinkquest.org/10784/circuit_symbols.html?tql-iframe)

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- [http://library.thinkquest.org/10784/circuit\\_symbols.html?tql-iframe](http://library.thinkquest.org/10784/circuit_symbols.html?tql-iframe) ; accessed Sept. 19<sup>th</sup>, 2010.

The Examiner's Answer States (p. 9):

"The degree to which L1 would be saturable would not alter patentability, since the selection of magnetic was well known and predictable."

Appellant Responds:

Appellant is not claiming a saturable reactor, and the issue is not whether the selection of magnetic elements is known, but rather whether or not the specific combination was suggested.

The Examiner's Answer States (p. 9):

"Balakarishnan explicitly teaches as much in the embodiment of Figure 6 where an additional inductor is shown to enhance the filtering characteristics of the pi filter."

Appellant Responds:

Appellant agrees that the primary reference touts the advantages of the filter circuits disclosed therein. This teaching, however, would have lead the skilled artisan away from the use of other filter solutions. No evidence is provided to suggest that the characteristics of the filter circuit of the secondary '114 reference are "enhanced." The references, when looked at as a whole, teach away from using the identified filter circuit of the secondary '114 reference and instead teach toward the use of the filter circuits of the primary 168 reference.

The Examiner's Answer States (p. 12):

"The pi filter of Saleh (Fig. 1A C41, C42, L1, C45, C46) could be bodily incorporated into the reference of Balakarishnan to replace the pi filter of Balakarishnan (Figure 1 103-105, Figure 6 602-604)."

Appellant Responds:

The Examiner presents no evidence that the references suggest such a replacement would be beneficial, relying entirely upon unsupported allegations of "enhancement." Appellant has shown evidence of teaching away from this combination as evidenced by the relevant technical differences and express teachings.

The Examiner's Answer States (p. 12):

“(I)t would have been obvious of one of ordinary skill in the art to implement a non-electrolytic capacitor in parallel with the electrolytic capacitor 603 of Balakrishnan in order to filter high frequency components due to the low ESR of the non-electrolytic capacitor.”

Appellant Responds:

In isolation and ignoring the express teachings and purpose of the primary reference, non-electrolytic capacitors are known to be used in circuits. What the Examiner fails to address is that the Examiner is ignoring the teachings as a whole, which suggest such components should not be added. Thus, the proposed modification is expressly contradicted by the teachings of one of the benefits of the primary '168 reference. In particular, the Examiner is proposing a combination that would defeat the benefit of “reduc[ing] the cost and complexity of input EMI filter circuitry....” ('168 reference; Col. 2:31-33). Particularly, the primary '168 reference teaches that it is desirable to use a single larger bulk capacitor for smoothing and filtering as “the elimination of one bulk storage capacitor typically provides a significant cost savings over the configuration [with several smaller capacitors] since the cost of each capacitor component is strongly influenced by the packaging itself which is reduced using a single component.” ('168 reference; Col. 4:7-9). Per M.P.E.P. § 2143.01, the rejection is *prima facie* invalid.

The Examiner's Answer States (p. 12):

“Balakrishnan teaches adjusting the capacitance of the pi filter from a large input capacitance implemented with a large bulk capacitor show in Fig. 1 103 to a small capacitance implemented without a capacitor and instead relying on the capacitance in the AC line as depicted in Figure 6 201.”

Appellant Responds:

Fig. 6 is consistent with the evidence of teaching away in that it contains a single large electrolytic capacitor 603. The identified capacitance 201 is before the rectifier and is unrelated to the Examiner's assertions of correspondence or to the filter circuit of the secondary reference, for which there is no AC source.

The Examiner's Answer States (p. 16):

"(t)he main reference Balakrishnan teaches using a range of capacitances from a large input bulk electrolytic capacitor to no capacitor, relying instead only on the AC input capacitance."

Appellant Responds:

Each of the relied upon figures of the primary '169 reference includes a large bulk electrolytic capacitor. The Examiner appears to be referencing teachings relating to a capacitor that is not part of the Examiner's allegation of correspondence.

**IV. Conclusion**

In view of the above, and the underlying Appeal Brief, Appellant submits that the rejections of claims 1-2 and 7-11 are improper and therefore requests reversal of the rejections as applied to the appealed claims and allowance of the entire application.

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